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ABSTRACT

The Information Exchange Procedures (IEP) project creates the capability for exchange and reporting of that information, both financial and otherwise, necessary to calculate and evaluate costs (1) by discipline and course level, (2) by student major and student level, and (3) per unit of output. Most uses of comparable information and analysis can be grouped into three management functions: resource acquisitions, resource allocation, and planning and management. The major benefits of comparative analysis come from determining why differences exist. Principles used to guide efforts in this area indicate the collected data should be useful to the decisionmaking and planning process of postsecondary education, the conventions and procedures for aggregating the data must be uniform and acceptable, the information should arise from uniform, acceptably defined terms, and the reporting and exchange should involve two-way communication with built-in feedback mechanisms. The two phases of the project are concerned with direct costs and full or allocated costs. (Author/MJM)

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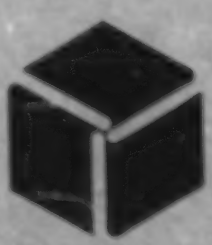
INFORMATION EXCHANGE PROCEDURES:
Overview and General Approach

Field Review Edition
Technical Report 28

INFORMATION EXCHANGE PROCEDURES:
Overview and General Approach

TECHNICAL REPORT 28

National Center for Higher Education Management Systems at WICHE



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- provide improved information to higher education administration at all levels.
- facilitate exchange of comparable data among institutions.
- facilitate reporting of comparable information at the state and national levels.

INFORMATION EXCHANGE PROCEDURES

INFORMATION EXCHANGE PROCEDURES:

Overview and General Approach

A Synopsis

Technical Report No. 28

A Field Review Edition

Leonard C. Romney, M.A.

September 1972

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Information Exchange Procedures: Overview and General Approach has been reviewed and released by the Information Exchange Procedures Steering Committee and Task Force and the NCHEMS staff.

Opinions expressed in this paper are those of the author and the IEP Task Force and Steering Committee and do not represent an official position of NCHEMS, WICHE, or U.S.O.E.

ABSTRACT

The purpose of the Information Exchange Procedures project is to create the capability for exchange and reporting of that information, both financial and otherwise, necessary to calculate and evaluate costs (1) by discipline and course level, (2) by student major and student level, and (3) per unit of output.

Most uses of comparable information and analysis can be grouped into three management functions: resource acquisition, resource allocation, and planning and management. The major benefits of comparative analysis come from determining why differences exist.

The staff and the IEP Task Force have agreed upon a set of principles to guide their efforts in this sensitive area. First, the collected data should be useful to the decision-making and planning process of postsecondary education. Second, the conventions and procedures for aggregating the data must be uniform and acceptable. Third, information should arise from uniform, acceptably defined terms. Finally, reporting and exchange should involve two-way communication with built-in feedback mechanisms.

The two phases of the project differ significantly: Phase I is concerned with direct costs, while Phase II deals with full or allocated costs. The level of detail in Phase II will probably be more disaggregated than in Phase I. Phase II will deal with unitizing procedures for all primary programs rather than just the instruction program as in Phase I.

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INTRODUCTION

Accountability is the conspicuous hallmark of the times and indeed can be said to characterize the current postsecondary educational milieu. Federal agencies, state agencies, governing boards, private donors, and the public at large are requesting that the resources they provide be used effectively and efficiently. Coherent response by the academic community to these requests depends to a great extent on the availability of (1) comparable* information from postsecondary institutions and (2) well-conceived procedures for exchanging and reporting the information.

In creating the capability to exchange and report comparable data, one must give full consideration to the legitimate concerns of those who provide the data, especially with regard to the limits and possible misuse of the data even though they may be comparable. Opponents, for example, believe that such institutional characteristics as size, quality, location, purpose, history, and goals make it impractical to attempt to derive comparable data or to use such data for comparative analysis. They suspect that the data will be used against the institution; that the data will be misapplied or unfairly used; and that data availability will encourage outsiders to intervene in the operations of institutions. Opponents also contend that comparable data will result ultimately in a leveling and homogenization of programs and institutions.

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*See footnote on page 5 for a general description of data comparability.

Proponents of the general disclosure of comparable data predict that more intelligent planning, more informed decision making, more equitable resource allocations, improved efficiency and economy, and possibly improved effectiveness will result.

The Information Exchange Procedures Task Force recognizes that the NCHEMS IEP project touches upon sensitive areas since it provides a potential for increased availability of information that may be used without due consideration for its inherent limitations and qualifications. Nevertheless, the Task Force is of the opinion that the objective of establishing a basis of comparable information for exchange and reporting should be pursued, because its members firmly believe that higher education is safeguarded best when reliable information is readily available and understood.

In response to the views of both proponents and opponents to such an undertaking, due consideration must be given to the following:

1. Comparisons must be pursued to the point of understanding <u>why</u> any identified differences occur. Considerable caution must be employed in making comparisons among institutions or among programs within and among institutions, even on the basis of relative factors. Comparative analyses of comparable information should take into account a variety of institutional variables in order to distinguish program differences.

2. Excessive enforcement of accountability requirements should not lead to standardized performance values for higher education. One of the strengths of higher education in the United States is its diversity in terms of programs, funding, and accessibility. A loss of this diversity could result in a more homogeneous and uniform higher education system but one incapable of innovation, free inquiry, or response to the changing needs of society. Therefore, information exchange should not foster standards that induce conformity and limited flexibility, nor should bench mark data be interpreted as operational standards.

3. The lack of reliable outcome indicators carries with it serious limitations. Nevertheless, this current absence of outcome measures does not imply that the benefit (or outcome) side of the cost/benefit equation should be forgotten.

4. Exchanging and reporting of comparable information have significant implications for relationships between institutions and their fundors. For example, the availability of such information could constitute the basis for allocating resources to specific institutional programs or operating levels, and thus possibly hamper internal management. Moreover, comparable unit cost information could result in the abandonment of selected high-cost but necessary programs as well as in the establishment of tuition differentials that would restrict enrollment of the economically disadvantaged. Also, the existence of comparable data may encourage the federal government to use them for establishing levels of support or for accreditation purposes.

POTENTIAL USES OF COMPARABLE DATA

The uses of such comparable information by institutions, governing boards, and state and federal government agencies are extremely varied. In this regard the reader should recognize (1) that the range of uses will vary from state to state and from board to board, depending upon existing authorities and programs and (2) that uses may be made by one kind of agency in one state and a different agency in another state (e.g., the executive budget office in one state and the higher education coordinating board in another).

Comparable information has a variety of uses: to carry out assigned formal responsibilities; to achieve goals (such as broad, publicly stated goals of equal access to postsecondary education or provision of trained manpower in shortage categories); to resolve controversies or conflicts of interest; to achieve optimum utilization of scarce resources; or to limit appropriations in order to avoid tax increases.

Although comparable information and analysis have many potential uses, most can be grouped into three general management functions.

1. Resource Acquisition. The complex nature and diversity of higher education, coupled with increasing shortages of both public and private funds, make comparisons of investments, of processes, and of "outcomes" important. Wherever one or more units must justify needs to a controlling

body and compete with similar units for limited resources, comparative data will be used. These data, then, must be comparable.*

2. Resource Allocation. Comparative analysis of comparable data is a time-tested method for evaluating alternative programs, operating styles, and resource requirements and is an effective means for enhancing the efficient and effective utilization of resources.

3. Planning and Management. The process of collecting, aggregating, and analyzing institutional data for exchange and reporting purposes will almost necessarily promote a better understanding of institutional character and requirements. More important, perhaps, is the fact that comparable information and comparative analysis are indispensible aids in planning, evaluating, and managing programs at any level in order to achieve the desired results.

Although comparisons of information are basic to each of the general uses just described, the major benefits of comparative analysis come from determining

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*Data derived from one source are reasonably comparable with data from a second source if the following conditions are met:

1. The basic data elements are defined and measured in the same way.
2. The data are arrayed in a common structure.
3. The data are inserted into the common structure in a compatible manner.
4. The data are aggregated and summarized in accordance with a common set of procedures.

why differences exist. In order for such analyses to be reliable, full consideration must be given to the reasons for differences in data. This more careful approach to comparative analysis places greater obligations on the individuals making the analysis; they no longer can assume that any differences are unacceptable. They must identify why these differences exist.

Greater obligations are also incumbent upon decision makers, for they must decide if the differences are justified. In this context it should be emphasized that valid program differences should be maintained.

PRINCIPLES OF INFORMATION EXCHANGE AND REPORTING

The development of a system for exchanging and reporting comparable information should be based on a number of broad principles. First, the collected data should be useful to the decision-making and planning process of post-secondary education. Second, the conventions and procedures for aggregating the collected data must be uniform and acceptable. Third, information for exchange and reporting should arise from uniform, acceptably defined terms. Finally, one of the fundamental considerations for such a system is that reporting and exchange constitute two-way thoroughfares and that appropriate feedback mechanisms for both generators and suppliers of the data are indispensible.

Given these broad principles, a number of significant guidelines, which should be adhered to throughout the development of the IEP project, may be enumerated:

1. The structures, measures, and procedures developed for information exchange and reporting purposes should be neutral and should not themselves contribute to any program differences that may be identified.

2. The procedures for information exchange and reporting should emphasize that responsibilities accrue to all parties. Just as institutions must be held accountable, those who hold them accountable must define the parameters of accountability. In the same manner that legal and fiduciary

reporting are no longer adequate in determining accountability, vague statements of state or national purposes are no longer adequate. The process of managing the educational enterprise should begin with an analysis of the needs which that enterprise should fulfill and with concise statements of educational goals and objectives understood by all parties concerned, including public officials, governing boards, regulatory agencies, and institutional administrators. In this context information exchange and reporting of comparable information have the potential to stimulate all participants in the decision-making process to establish and use a positive communication link between institutions and those who hold them accountable.

3. Comparable information resulting from the project's information exchange and reporting procedures should assist various users to perform their responsibilities. These responsibilities range from monitoring the overall status and effectiveness of postsecondary education through planning and evaluating education goals at various levels to managing institutions and programs within institutions.

4. Analysis beyond cost comparisons will be necessary to evaluate programs and their differences. The IEP project must regard as inseparable the development of procedures for achieving data comparability and the development of techniques and principles for analyzing those data. In this regard the analyses should avoid oversimplified conclusions or unnecessarily detailed levels of aggregation.

5. A method of communication that can be adopted by users at all levels of postsecondary education should be developed. For individual institutions this guideline implies the development of internal information systems that are compatible with standard data elements and definitions. For such users as public officials, governing bodies, and regulatory agencies, an acceptance of the method of communication as the vehicle for asking questions of the postsecondary educational community is implied.

6. The procedures should provide a mechanism for minimizing the potential burden of gathering and analyzing the information. Information is costly; therefore, the project's emphasis should be on a critical subset of information and the most generalized uses of that information. This guideline also suggests that statistical information required in applications for financial assistance under both general and categorical federal programs should utilize the same data elements and conventions as used for regular reporting to state and federal agencies and for internal institutional information systems.

The uses made of information about postsecondary education will continue to be dependent upon the good judgment and the good faith of the users, both at the institutional level and at state and federal levels. Nevertheless, improvement of the available information will provide at least the basis for more intelligent and more equitable decision making at all levels.

OBJECTIVES OF THE INFORMATION EXCHANGE PROCEDURES PROJECT

The initial purpose of the IEP project, as outlined in the original proposal to the U. S. Office of Education, was to create the methodology necessary for exchanging information on:

1. Costs by discipline and course level
2. Costs by student major and student level
3. Cost per unit of output

Subsequent to that proposal, decisions by the Task Force and Steering Committee have caused the purpose of the project to be modified in two significant ways. First, the emphasis on the development of a system for information reporting as well as exchange has supplanted the previous emphasis on exchange alone. Currently, the objectives of the project reflect recognition by elements of the NCHEMS Advisory Structure that reporting procedures deserve equal consideration at every step in the development of the project. Second, all participants in the project have recognized that all parties to the information exchange and reporting procedures would be better served if the scope of the project were expanded to include not only cost information but other related kinds of information as well. In particular, it has been concluded that such information as types and amounts of nonfinancial resources available to and utilized by the institution, the kinds of activities in which the institution engages, the characteristics of the student body and the faculty, and the quality of educational outcomes is essential for appropriate and valid analyses and interpretations of cost data.

In response to these considerations, the purpose of the project can be stated more appropriately as follows:

The purpose of the Information Exchange Procedures project is to create the capability for exchange and reporting of that information, both financial and otherwise, necessary to calculate and evaluate costs:

1. by discipline and course level,
2. by student major and student level,
3. per unit of output.

APPROACH TO THE PROJECT

The achievement of these project purposes will require a major effort over a substantial period of time. While full development of the project is a lengthy process, the Task Force and NCHEMS staff recognize the urgent need for improved postsecondary information in the immediate future. In order to be responsive to these more immediate concerns while concommitantly remaining faithful to the purposes of the project, the project will be undertaken in at least two distinct phases. This phasing results not only from the urgency aspect but also from the fact that certain procedures necessary for the complete achievement of the project will not be available on a near-term basis. Therefore, the following phases are planned:

Phase I of the project will be concerned with developing structures, measures, procedures, and analytical techniques to determine:

1. Total direct costs and related information for selected aggregations in each of the programs of the Program Classification Structure (PCS).
2. Summary institutional descriptors (i.e., type, size, location, enrollments, etc.).
3. Unitized information, both financial and otherwise, within the Instruction Program of the PCS necessary to calculate and evaluate direct costs:
   a. by discipline cluster by course level,
   b. by student major by student level,
   c. per unit of output.

Perhaps the key word in this phase is "direct" because initially the project will deal with expenditures only as they are directly associated with the selected aggregations of elements of the PCS. No procedures for allocating costs and related information from support to primary programs are scheduled during this phase of the project. It is anticipated that this methodology will be completed for information exchange and reporting purposes by September 1973.

Phase II of the project will be concerned with developing structures, measures, procedures, and analytical techniques to determine:

1. Full (allocated) costs and related information for selected aggregations in primary programs as defined by the PCS.
2. Summary institutional descriptors (more complete than in Phase I).
3. Unitized information, both financial and otherwise, within the Instruction Program of the PCS necessary to calculate and evaluate full costs.
4. Unitized information, both financial and otherwise, within the other Primary Programs of the PCS necessary to calculate and evaluate full costs by aggregations that are currently unspecified.

The key to Phase II of the project is the word "full" because ultimately the project is concerned with direct and allocated indirect expenditures as they are associated with selected aggregations of primary program elements of the PCS. The Cost Finding Principles project will provide many of the procedures and techniques involved in allocating indirect costs to the primary programs. No completion date has yet been determined for this phase of the project.

In summary, it should be emphasized that at least three significant differences exist between Phases I and II. First, Phase I is concerned with direct costs whereas Phase II deals with full or allocated costs. Second, the level of detail in Phase II most likely will be more disaggregated than in Phase I, primarily because the state of the art will have advanced by that time due to the completion of related projects. A third difference is that Phase II will deal with unitizing procedures for all primary programs rather than just the Instruction Program as is the case in Phase I.

Although the outcomes of the two phases just described differ in the types of information they are designed to produce, the general processes used for producing that information can be described in the same way. The following diagram outlines the basic elements of the process of information exchange and reporting. Each of these elements is described in subsequent paragraphs.

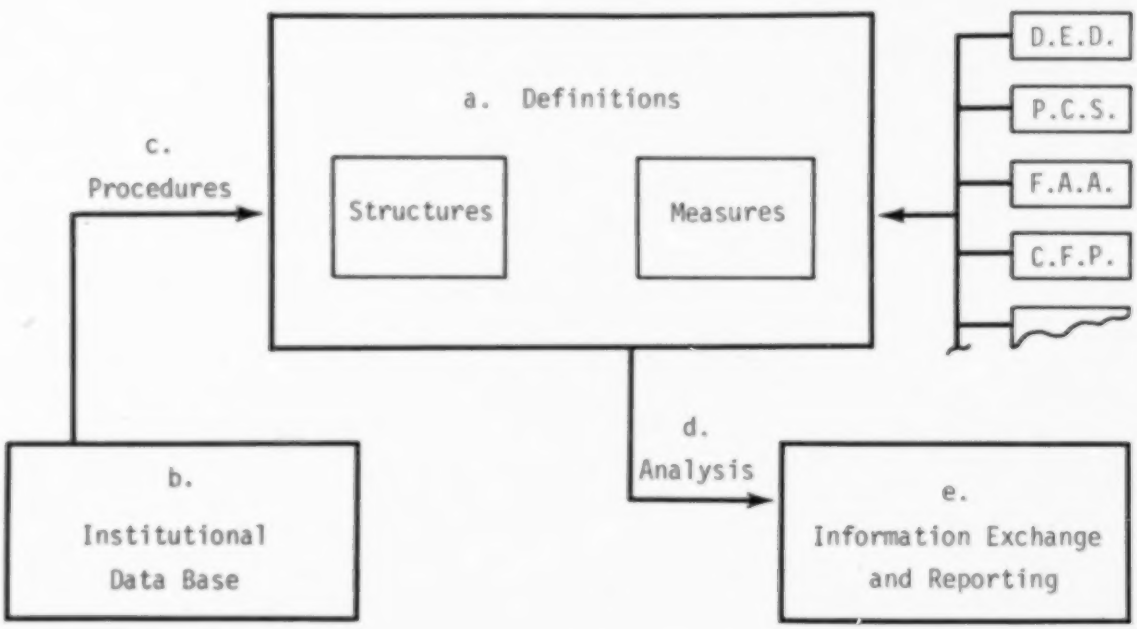

FIGURE 1. The NCHEMS Approach to the Information Exchange Procedures Project

a. Definitions

The starting point for the development of procedures to exchange and report comparable information is the definition of structures (such as the PCS) to file the data and measures (such as the program measures) to describe the categories of data to be filed. Other projects, currently being directed by NCHEMS, will be sources for many of these definitions.

b. Institutional Data Base

Fundamental to the exchange and reporting procedures is an institutionally defined and maintained data base that can be linked to the NCHEMS definitions.

c. Procedures

Imperative to the exchange and reporting procedures are techniques for mapping institutional data to the NCHEMS structures and measures in a reasonably standard manner. The development of these techniques is one of the most important areas of concern for the project.

d. Analysis

The analysis portion of the approach deals with interrelating the data contained in the standard structures and measures and organizing the

comparable information, both financial and otherwise, in formats that support the responsibilities of the parties involved. Included are such things as designing exchange and report formats, determining relevant categories of related data, and describing considerations that must be addressed when the data are compared.

e. Information Exchange and Reporting

The previous steps deal with the development of a set of procedures and formats to be applied internally within an institution for purposes of calculating specific cost factors and indices in a way that will allow their comparison in conjunction with related information. The final step in the entire process is the development of guidelines and formats to govern the mechanical aspects of interinstitutional exchange and reporting of this information.

One of the principal aspects of the process just described is the need for related information sufficient to distinguish program differences. A substantial set of program-related information has been categorized and defined in the preliminary draft of the NCHEMS Program Measures document (Topping and Miyataki, 1972), and the IEP Task Force will use the document to guide its efforts in this area. The categories of measures described are:

1. Resource Measures - Measures of the physical and human resources utilized during a stated time period. Resource measures are expressed only in nonmonetary terms, i.e., physical units. Subgroups of resource measures are:
   a. Personnel
   b. Facilities
   c. Equipment
   d. Supplies and Services

2. Financial Measures - Measures that reflect the expenditures of dollars for physical and human resources utilized at a specified level of activity during a stated time period. Financial measures also indicate the source of the funds expended. Subgroups of financial measures are:
   a. Revenues
   b. Expenditures

3. Target and Beneficiary Group Measures - Measures that identify and describe the groups to be served by, and the groups that benefit from the activities of a program during a stated time period. The measures can be expressed in absolute numbers, percentages, or descriptive terminology. Such measures, for example, are specific categories of students, faculty, or segments of the community.

4. Activity Measures - Measures reflecting the level and type of operations carried on during a stated time period. For example, an activity

measure in an instructional program is the number of weekly student contact hours generated; for a student services program an activity measure is the number of meals served; an activity measure for a personnel service program is the number of job applications processed or the number of new employees hired; and an activity measure for a custodial service program is the number of square feet maintained.

5. Outcome Measures - Measures that quantitatively express the outcomes achieved or the products generated by the activities of a program during a stated time period. Examples of outcome measures for an instructional program are the numbers of degrees or certificates granted and the number of program completions. An organized research program may have such outcome measures as patents awarded, number and type of publications produced, and awards received.

CONCLUSIONS

The implications of information exchange and reporting for postsecondary education are many, and we have little experience to indicate what the effect of unlimited and detailed information exchange and reporting would be on higher education. In spite of the concerns expressed here, it appears that many benefits are to be gained from such activities. There is no need to disregard concerns, for they are real and potentially troublesome. Nevertheless, information exchange and reporting are basic to the management process. They are used currently. The emphasis should be on how to alter the forms of exchange and reporting in order to reduce the concerns. The ultimate advantages may not be in the values derived but in the conceptual change in managerial philosophy that is based on looking at the outcomes of higher education rather than on inputs or consumption.

One of the hopes that information exchange and reporting offer is that higher education will be able to demonstrate that it can plan and manage effectively and deserves an opportunity to exercise greater control over its own operations. This hope includes the potential for lessening external controls and returning to institutional autonomy based upon confidence in the ability of institutions to manage.

Finally, it is important that any system of information exchange and reporting be based upon a solid understanding of the nature of the information, its limitations, and its appropriateness for use in specific decision-making situations. Properly administered, the exchange and reporting of information can further the cause of responsible management, accountability, and goal fulfillment.

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